

### Abstract of the Disclosure

Homogeneous fluorescence polarization (anisotropy) assays for detecting and quantifying metal ions in solution, based the metal-dependent binding of a fluorescent ligand to an unlabeled macromolecule, or the binding of a metal ion to a fluorescent labeled macromolecule. The metal-dependent binding of a fluorescent ligand to an unlabeled macromolecule (metallo-macromolecule) effects a measurable change in anisotropy as will the binding of metal ions to a fluorescent labeled macromolecule. Binding of the fluorescent ligand to the unlabeled macromolecule is metal dependent with the change in anisotropy being proportional to the concentration of bound metal ions. No binding of the fluorescent ligand to the macromolecule occurs in the absence of metal ions. Conversely, if the fluorescent label is first conjugated to a metallo-macromolecule and the metallo-macromolecule is subsequently stripped of its metal ion, it may then be used to transduce the binding of metal ions. Transduction is provided wherein the covalently bound fluorescent label exhibits changes in anisotropy proportional to the concentration of bound metal ions. In all methods, the change in anisotropy may be simply related to the metal ion concentration of the test solution.